

REMARKS

The Office Action of December 10, 2004 has been reviewed and the Examiner's comments carefully considered. The present Amendment cancels claims 1-43, withdraws claims 44-47 and adds new claims 48-71, all in accordance with the originally-filed specification. No new matter has been added. Accordingly, claims 48-71 remain in this application, and claims 48 and 65 are in independent form.

First, in the Action, the Examiner has restricted the application and required Applicant to elect a single invention, namely either Group I, claims 1-43, drawn to methods of manufacturing spherical glass articles; or Group II, claims 44-47, drawn to a device for manufacturing glass articles. In a telephone conversation on December 7, 2004, Applicant's representative provisionally elected the invention of Group I, claims 1-43, for further prosecution. Applicant hereby confirms that election and withdraws claims 44-47. However, Applicant specifically reserves the right to prosecute claims 44-47, drawn to the device for manufacturing the articles, in a divisional application. While claims 1-43 have been cancelled through the foregoing amendment, claims 48-71 are directed to methods of manufacturing spherical glass articles, and are properly included in Group I.

On page 3 of the Office Action, the Examiner notes that certain features in the claims were not supported by the disclosure of the application, or the parent application. In particular, the features of paragraphs 7a-7m were not specifically set forth in the present application or parent application according to the Examiner's review thereof. In addition, the Examiner objected to the specification for failing to provide proper antecedent basis for the claimed subject matter of these features. Still further, the Examiner has rejected claims 1-43 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Again, the Examiner believes that the features "a" to "m" are not supported by the specification.

Claims 6-12, 16, 20 and 21 stand rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. Further, claims 1 and 18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Dominitz patent. Claim 25 stands rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as being obvious over the Hollister, Jr. reference. Further, claim 19 stands rejected under 35 U.S.C. § 103(a) as being obvious over the Dominitz patent in view of the Ferngren patent. Claims 1-5, 13-17, 22-24, 26, 30, 39 and 40 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Hollister, Jr. reference in view of the Dominitz patent. Finally, claim 31 stands rejected under 35 U.S.C. § 103(a) as being obvious over the Hollister, Jr. reference and the Dominitz patent, in further view of the Devine patent. In view of the newly-added claims and the following remarks, Applicant respectfully requests reconsideration of these rejections. Applicant further notes that the Examiner believes that previously-pending claims 6-12 would be allowable if rewritten to overcome certain indefiniteness rejections, and to include all the limitations of the base claim and any intervening claims.

Summary of the Invention

As set forth in independent claim 48, the present invention is directed to a mass production method for manufacturing successive spherical glass articles, in each of which is accommodated a three-dimensional object or figurine. The process according to these claims is illustrated, for example, in Figs. 6-12. The method includes the steps of: (a) providing a container with a mass of molten glass, the container including a discharge opening through which liquid glass can be delivered; (b) providing a plurality of thermally resistant figurines; and (c) repeating the steps (d)-(h) for successfully enclosing a figurine in the glass. Steps (d)-(h) are as follows: (d) dividing the liquid glass delivered via the discharge opening into successive portions; (e) guiding the portions into a mold; (f) fully enclosing at least one figurine on or at

least partially in the portion of glass guided into the mold, thereby forming a glass mass with the at least one figurine enclosed therein; (g) removing the formed glass mass from the mold; and (h) modeling the mass to a spherical form by omnidirectional rolling for a time, together with simultaneous cooling, such that the mass solidifies and forms the spherical article.

The present invention is further directed to a method of manufacturing an object of glass with at least one three-dimensional figurine enclosed therein. As set forth in independent claim 65, the method includes the steps of: introducing a portion of glass into a mold cavity in the mold, the glass having a desired temperature at which the glass is soft; discharging or placing a heated figurine into the glass; and pressing the portion of glass with the figurine therein substantially into a desired shape.

The Cited Prior Art

The Dominitz patent is directed to a process for manufacturing an object displaying a message. The Dominitz patent relates to a glass support with a message on the surface, and the support is introduced in a container with a molten transparent material. Support is surrounded by this material, and the resultant product can be a ball, showing the initial message, and the insert can be pre-heated and introduced into the glass pool through a guide located near the exit or outlet of the container. In a further embodiment, a colored glass figurine, manufactured with a blowtorch, can be used, instead of the support.

The Hollister, Jr. reference discloses a method of manufacturing glass articles by providing a mass of molten glass, carrying the glass to the mold cavity, providing glazed clay figurines, pouring a first portion of glass into a lower mold, placing the figurine in the mold, pouring a second portion of glass onto the first portion and pressing the glass with an upper mold and baking. The Examiner uses the Ferngren patent for its teaching of the use of cutting edge scissors to obtain shapes well

known in the art of glass gob cutting. In addition, the Examiner uses the Devine patent for its teaching of glass encapsulation techniques in a vacuum.

Independent Claim 48

Independent claim 48 specifically teaches a novel and innovative mass production method for manufacturing successive spherical glass articles, in each of which is accommodated a three-dimensional object or figurine. In particular, steps (a)-(h) teach a unique approach to mass producing such articles by providing a container with a discharge opening for glass delivery, providing the figurines and repeating certain steps to successfully enclose the figurines in glass. In these steps, specifically at (d)-(h), the liquid glass is divided into successive portions, which are guided into the mold. In this manner, the figurine is wholly enclosed on or at least partially in the portions of glass guided into the mold, which thereby forms a glass mass with the figurine enclosed therein.

Next, the formed glass mass is removed from the mold and modeled to a spherical form by omnidirectional rolling for a time. In addition, the mass is simultaneously cooled, such that the mass solidifies in the form of the desired spherical article. Accordingly, molten glass is obtained, is portioned, and these portions are brought to the mold for enclosing a figurine. Accordingly, using the method described in independent claim 48, this method is particularly suitable for mass production of successive spherical glass articles, and the specific method steps are particularly adaptable to odd-shaped figurines or objects.

None of the Dominitz patent, the Hollister, Jr. reference, the Ferngren patent nor the Divine patent, whether used alone or in combination, teach such a novel method including the recited steps. Further, none of these references teach or suggest a method that can be used to successfully and successively mass produce spherical glass

articles, in each of which is accommodated a three-dimensional object or figurine. Still further, none of the cited prior art teach a method of mass producing spherical glass articles, where the three-dimensional objects or figurines may have a variable or odd shape.

In addition, the present invention and method defined in claim 48 at least partially results from the understanding that even after the glass is present in the mold, some additional rolling and forming is necessary. Such additional steps are not taught, recognized or resolved in the cited prior art. The use of this two-step forming process represents a drastic improvement in the art. Specifically, the process described in independent claim 48 provides a more efficient method for mass production. Further, it should be noted that the rollers (step (h)) are capable of rolling many spherical objects at the same time, representing even greater efficiency in the mass production process.

Applicant also asserts that the steps in claim 48 define a specified and repetitive order. According to this claim, only after guiding or portioning molten glass in the mold is a figurine added. Therefore, this provides an additional distinguishing characteristic, in that the process of the Dominitz patent always requires the addition of the tablet in the molten glass, and then portioning the glass/figurine combination afterwards. Applicant submits that the order of the steps set forth in independent claim 48 provide a process that requires not only differing steps, but a differing order within the steps.

Accordingly, for these reasons, independent claim 48 is not anticipated by or rendered obvious over the Dominitz patent, the Hollister, Jr. reference, the Ferngren patent, the Divine patent or any of the cited prior art. With reference to the Dominitz patent, this document teaches the enclosing of a tablet or disk with a message, and this method is not suited for or adaptable to the enclosure of a three-dimensional figurine having a relief, such as a face having a nose. Instead, the method of the

Dominitz patent teaches discharging the figurine into the glass before portioning the glass and before the glass is in the mold. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Accordingly, allowance of independent claim 48 is respectfully requested.

Independent Claim 65

Independent claim 65 is directed to a method of manufacturing an object of glass with at least one three-dimensional figurine enclosed therein. This method includes the steps of introducing a portion of glass into a mold cavity of a mold, discharging or placing a heated figurine into the glass and pressing the portion of glass with the figurine therein into a desired shape.

None of the cited prior art provides for the discharge or placement of a heated figurine into the glass. While the method of the present invention discusses the discharge or placement (such as by pressing) of a heated figurine into the glass, none of the prior art teaches such a step. With respect to the Hollister, Jr. reference, the method described in this document neither teaches nor suggests the pre-heating of the figurine, nor does this reference teach or suggest the pouring/discharging of the figurine into the glass. Similarly, with respect to the Dominitz patent, the method of this reference does not teach or suggest the discharging or placing a heated figurine into the glass. Such a step is particularly useful in connection with odd-shaped or variable figurines.

According to the present invention, by having the glass in the mold and bringing the figurine into the glass, the entrapment of air bubbles is reduced. In addition, preheating a figurine also has a positive effect on the reduction of air bubbles. In particular, a figurine having a high temperature, such as 850°C, is “absorbed” more

easily without air bubbles in the glass. Further, such an effect is increased if the temperature is higher than the glass, and the glass cools during transport from the discharge to the mold from 1100°C to 800°C. In addition, and again, the Hollister, Jr. reference only teaches the addition of a second glass portion prior to applying any pressure. However, with respect to independent claim 65 of the present invention, the glass is pressed after the heated figurine is discharged or placed into the glass.

Still further, as discussed above in connection with claim 48, independent claim 65 also provides an order of steps, wherein a portion of glass is introduced into the mold, then the figurine is discharged into the glass, and then the combination is formed or pressed into the desired shape. Therefore, as discussed above, the method of manufacturing set forth in claim 65 represents a unique and inventive process to obtain an object of glass having a figurine enclosed therein.

For the foregoing reasons, independent claim 65 is not anticipated by or rendered obvious over the Dominitz patent, the Hollister, Jr. patent or any of the remaining art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Accordingly, allowance of independent claim 65 is respectfully requested.

Summary

Claims 49-64 depend either directly or indirectly from and add further limitations to independent claim 48 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 48. In addition, these dependent claims include many additional novel and innovative features that are not taught or suggested in the prior art. Therefore, for all the above reasons, allowance of claims 49-64 is respectfully requested.

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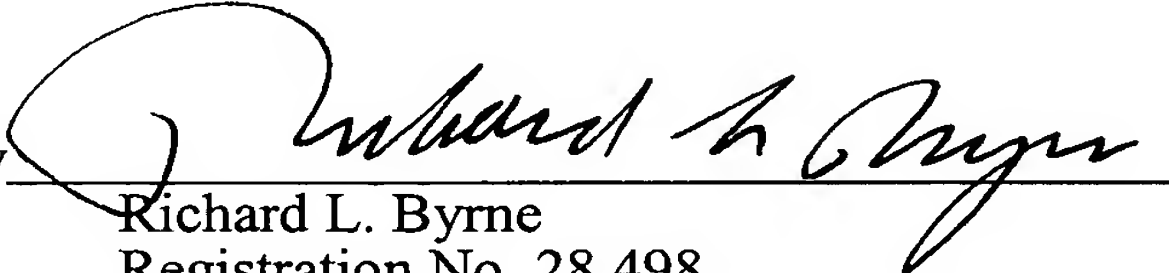
Claims 66-71 depend either directly or indirectly from and add further limitations to independent claim 65 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 65. Further, as discussed above, these dependent claims include many additional features and limitations that are not taught or suggested in the prior art of record. Accordingly, for these reasons, allowance of claims 66-71 is respectfully requested.

For all the foregoing reasons, Applicant believes that claims 48-71, as added, are patentable over the cited prior art and in condition for allowance. Reconsideration of the rejections and allowance of all pending claims 48-71 are respectfully requested.

Respectfully submitted,

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